

For #1 & 2, find the distance between the given points. Round your answer to the nearest tenth.

1) A(-3, 2) and B(6, -7)

$$\begin{aligned} AB &= \sqrt{(6 - (-3))^2 + (-7 - 2)^2} \\ &= \sqrt{(9)^2 + (-9)^2} \\ &= \sqrt{81 + 81} = \sqrt{162} \approx 12.7 \end{aligned}$$

2) C(-4, -3) and D(-2, 8)

$$\begin{aligned} CD &= \sqrt{(-2 - (-4))^2 + (8 - (-3))^2} \\ &= \sqrt{(2)^2 + (11)^2} \\ &= \sqrt{4 + 121} = \sqrt{125} \approx 11.2 \end{aligned}$$

For #3 - , use the map below. The locations of the cities are as follows: Dunkirk (0, 0), Clearfield (10, 2), Lake City (5, 7) and Allentown (1, 4)

3. Find the distance between the following cities. Round your answer to the nearest tenths place.

a. Allentown to Clearfield
(1, 4) (10, 2)

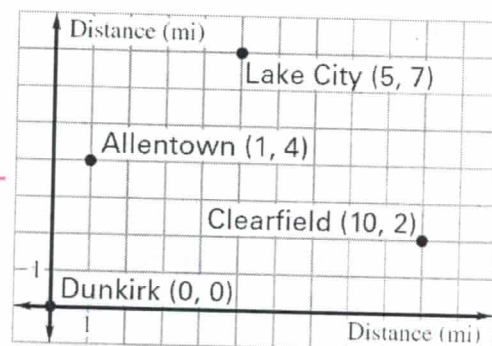
$$\begin{aligned} &= \sqrt{(10 - 1)^2 + (2 - 4)^2} \\ &= \sqrt{(9)^2 + (-2)^2} \\ &= \sqrt{81 + 4} = \sqrt{85} \approx 9.2 \end{aligned}$$

b. Lake City to Dunkirk
(5, 7) (0, 0)

$$\begin{aligned} &= \sqrt{(0 - 5)^2 + (0 - 7)^2} \\ &= \sqrt{(-5)^2 + (-7)^2} \\ &= \sqrt{25 + 49} = \sqrt{74} \approx 8.6 \end{aligned}$$

c. Clearfield to Lake City
(10, 2) (5, 7)

$$\begin{aligned} &= \sqrt{(5 - 10)^2 + (7 - 2)^2} \\ &= \sqrt{(-5)^2 + (5)^2} \\ &= \sqrt{25 + 25} = \sqrt{50} \approx 7.1 \end{aligned}$$



4. You are currently in Allentown, but you live in Dunkirk. You need to also drop off something by your friends house, which is in Clearfield, and get something at a store in Lake City. What is the total distance you travel from Allentown to Clearfield, then Clearfield to Lake City, then Lake City to Dunkirk?

$$9.2 + 7.1 + 8.6 = 24.9 \text{ miles}$$

5. Which two cities do you think have the shortest distance between them? Find that distance.

ALLENTOWN TO DUNKIRK
(1, 4) (0, 0)

$$\begin{aligned} &= \sqrt{(0 - 1)^2 + (0 - 4)^2} \\ &= \sqrt{1^2 + 4^2} = \sqrt{1 + 16} = \sqrt{17} \approx 4.1 \end{aligned}$$

4.1 miles

6. Use the triangle to find the measure of each side. Then find the perimeter of the triangle.

$$\overline{FH} = \underline{7} = \sqrt{(5-2)^2 + (1-1)^2}$$

$$= \sqrt{(7)^2 + 0^2}$$

$$= \sqrt{49} = 7$$

$$\overline{GH} = \underline{5} = \sqrt{(5-2)^2 + (1-4)^2}$$

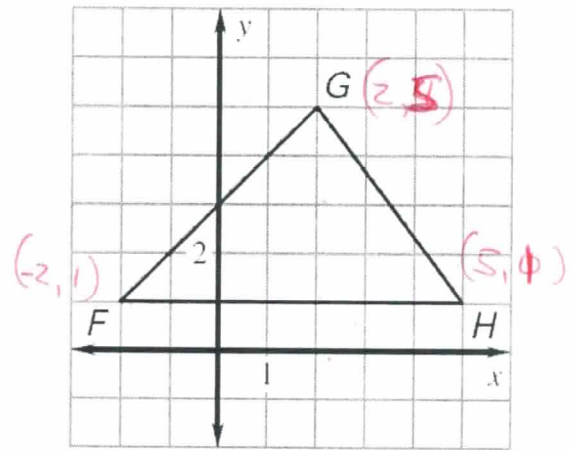
$$= \sqrt{3^2 + 4^2}$$

$$= \sqrt{9+16} = \sqrt{25} = 5$$

$$\overline{FG} = \underline{5.7} = \sqrt{(2-2)^2 + (5-1)^2}$$

$$= \sqrt{4^2 + 4^2} = \sqrt{16+16} = \sqrt{32} \approx 5.7$$

perimeter = 17.7



7. Use the triangle to find the measure of each side. Then find the perimeter of the triangle.

$$\overline{JL} = \underline{6} = \sqrt{(-3-3)^2 + (-3-3)^2}$$

$$= \sqrt{0^2 + 6^2}$$

$$= \sqrt{36} = 6$$

$$\overline{JK} = \underline{5.4} = \sqrt{(2-3)^2 + (1-3)^2}$$

$$= \sqrt{5^2 + (-2)^2}$$

$$\overline{KL} = \underline{6.4} = \sqrt{25+4} = \sqrt{29} \approx 5.4$$

$$= \sqrt{(2-3)^2 + (1-3)^2} = \sqrt{5^2 + 4^2} = \sqrt{25+16}$$

$$= \sqrt{41} \approx 6.4$$

perimeter = 17.8

